AMENDMENTS TO THE CLAIMS

Please cancel claims 17 and 18.

Please amend the claims as follows:

1. (Original) A box-nanoparticle, comprising:

a solid nanoparticle core between about 1 nm and about 1000 nm in diameter; and

a plurality of dendron ligands coordinated to the nanoparticle core, wherein the dendron ligands are substantially cross-linked.

2. (Original) The box-nanoparticle of Claim 1, wherein the nanoparticle core comprises a nanocrystal.

3. (Original) The box-nanoparticle of Claim 1, wherein the nanoparticle core comprises a metal, an elemental non-metal, an organic compound, a metal oxide, a metal chalcogenide, a metal pnictogen, a metal halide, an alloy, a mixed metal oxide, or a combination thereof.

4. (Original) The box-nanoparticle of Claim 1, wherein the nanoparticle core comprises a boride, a carbide, a silicide, a nitride, a phosphide, an arsenide, an oxide, a sulfide, a selenide, a telluride, a fluoride, a chloride, a bromide, an iodide, or a combination thereof.

5. (Original) The box-nanoparticle of Claim 1, wherein the nanoparticle core comprises an oxide of silicon, aluminum, titanium, zirconium, iron, nickel, cobalt, manganese, ruthenium, antimony, tin, cerium, barium, vanadium, chromium, lead, copper, indium, yttrium, zinc, mixed oxides thereof, or combinations thereof.

6. (Original) The box-nanoparticle of Claim 1, wherein the nanoparticle core comprises a CdSe nanocrystal, a CdS nanocrystal, or a CdSe/CdS core/shell nanocrystal.

7. (Original) The box-nanoparticle of Claim 1, wherein the nanoparticle core comprises a semiconductor, a magnetic material, a ferromagnetic material, a ferromagnetic material, a

paramagnetic material, a super-paramagnetic material, a piezoelectric material, a piezomagnetic material, an antimagnetic material, a catalyst, an antibial, an organic dye, or a bio-active species.

8. (Original) The box-nanoparticle of Claim 1, wherein the box-nanoparticle has an average diameter of less than about 100 nanometers.

9. (Original) The box-nanoparticle of Claim 1, wherein the dendron ligands comprise cross-linkable alkene, amine, hydroxyl, ester, halide, ketone, or aldehyde groups prior to cross-linking.

10. (Original) The box-nanoparticle of Claim 1, wherein the dendron ligands are selected from generation 2 (G2), generation 3 (G3), generation 4 (G4), or generation 5 (G5) dendrons, and wherein each dendron ligand is functionalized with one, two, three, four, or more binding sites for coordinating to the nanoparticle.

11. (Original) The box-nanoparticle of Claim 1, wherein the dendron ligands are selected from G3-(hydroxamide)-$CH=CH_2$, G3-(carboxylic)-$CH=CH_2$, G2-(amine)-ester, G3-(thiol)-$CH=CH_2$, G3-(diamine)-OH, G3-(thiol)-OH, G3-(dicarboxylic)-OH/PEG, or G4-(dicaboxylic)-$CH=CH_2$/PEG, prior to cross-linking.

12. (Original) The box-nanoparticle of Claim 1, wherein dendron ligands comprise cross-linkable alkene groups prior to cross-linking, and wherein the alkene groups are substantially cross-linked by a ring-closing metathesis reaction.

13. (Original) The box-nanoparticle of Claim 1, wherein the dendron ligands comprise cross-linkable groups prior to cross-linking, and wherein the cross-linkable groups are substantially cross-linked by a dendrimer bridging reaction using a linker molecule.

14. (Original) The box-nanoparticle of Claim 13, wherein the linker molecule comprises a G2 dendrimer amine.

15. (Currently Amended) A dendron-nanoparticle, comprising:

a solid nanoparticle core between about 1 nm and about 1000 nm in diameter; and

a plurality of dendron ligands coordinated to the nanoparticle core, wherein the nanoparticle core comprises a boride, a carbide, a silicide, a nitride, a phosphide, an arsenide, an oxide, a sulfide, a selenide, a telluride, a fluoride, a chloride, a bromide, an iodide, or a combination thereof.

16. (Original) The dendron-nanoparticle of Claim 15, wherein the nanoparticle core comprises a nanocrystal.

17. (Canceled)

18. (Canceled)

19. (Currently Amended) The dendron-nanoparticle of Claim ~~15~~ 52, wherein the nanoparticle core comprises an oxide of silicon, aluminum, titanium, zirconium, iron, nickel, cobalt, manganese, ruthenium, antimony, tin, cerium, barium, vanadium, chromium, lead, copper, indium, yttrium, zinc, mixed oxides thereof, or combinations thereof.

20. (Original) The dendron-nanoparticle of Claim 15, wherein the nanoparticle core comprises a CdSe nanocrystal, a CdSe nanocrystal, or a CdSe/CdS core/shell nanocrystal.

21. (Original) The dendron-nanoparticle of Claim 15, wherein the nanoparticle core comprises a semiconductor, a magnetic material, a ferromagnetic material, a ferromagnetic material, a paramagnetic material, a super-paramagnetic material, a piezoelectric material, a piezomagnetic material, an antimagnetic material, a catalyst, an antibial, an organic dye, or a bio-active species.

22. (Original) The dendron-nanoparticle of Claim 15, wherein the dendron-nanoparticle has an average diameter of less than about 100 nanometers.

23. (Original) The dendron-nanoparticle of Claim 15, wherein the dendron ligands are cross-linkable.

24. (Original) The dendron-nanoparticle of Claim 15, wherein the dendron ligands comprise cross-linkable alkene, amine, hydroxyl, ester, halide, ketone, or aldehyde groups prior to cross-linking.

25. (Original) The dendron-nanoparticle of Claim 15, wherein the dendron ligands are selected from generation 2 (G2), generation 3 (G3), generation 4 (G4), or generation 5 (G5) dendrons, and wherein each dendron ligand is functionalized with one, two, three, four, or more binding sites for coordinating to the nanoparticle.

26. (Original) The dendron-nanoparticle of Claim 15, wherein the dendron ligands are selected from G3-(hydroxamide)-$CH=CH_2$, G3-(carboxylic)-$CH=CH_2$, G2-(amine)-ester, G3-(thiol)-$CH=CH_2$, G3-(diamine)-OH, G3-(thiol)-OH, G3-(dicarboxylic)-OH/PEG, or G4-(dicaboxylic)-$CH=CH_2$/PEG, prior to cross-linking.

27. (Original) A dendron box comprising a plurality of dendron ligands that have been substantially cross-linked, wherein the dendron box has an average diameter of less than about 100 nanometers.

28. (Original) The dendron box of Claim 27, wherein the cross-linkable dendron ligands are selected from G3-(hydroxamide)-$CH=CH_2$, G3-(carboxylic)-$CH=CH_2$, G2-(amine)-ester, G3-(thiol)-$CH=CH_2$, G3-(diamine)-OH, G3-(thiol)-OH, G3-(dicarboxylic)-OH/PEG, or G4-(dicaboxylic)-$CH=CH_2$/PEG.

29. (Original) The dendron box of Claim 27, wherein dendron ligands comprise cross-linkable alkene groups prior to cross-linking, and wherein the alkene groups are substantially cross-linked by a ring-closing metathesis reaction.

30. (Original) The dendron box of Claim 27, wherein the dendron ligands comprise cross-linkable groups prior to cross-linking, and wherein the cross-linkable groups are substantially cross-linked by a dendrimer bridging reaction using a linker molecule.

31. (Original) A method of forming a dendron box comprising:

contacting a solid nanoparticle core between about 1 nm and about 100 nm in diameter with a plurality of cross-linkable dendron ligands to form a dendron-nanoparticle;

cross-linking the dendron ligands to form a box-nanoparticle; and

removing the solid nanoparticle core from the box-nanoparticle to form the dendron box.

32. (Original) The method of Claim 31, wherein the nanoparticle core comprises a nanocrystal.

33. (Original) The method of Claim 31, wherein the cross-linkable dendron ligands are selected from G3-(hydroxamide)-$CH=CH_2$, G3-(carboxylic)-$CH=CH_2$, G2-(amine)-ester, G3-(thiol)-$CH=CH_2$, G3-(diamine)-OH, G3-(thiol)-OH, G3-(dicarboxylic)-OH/PEG, or G4-(dicaboxylic)-$CH=CH_2$/PEG.

34. (Original) The method of Claim 31, wherein dendron ligands comprise cross-linkable alkene groups prior to cross-linking, and wherein the alkene groups are substantially cross-linked by a ring-closing metathesis reaction.

35. (Original) The method of Claim 31, wherein the dendron ligands comprise cross-linkable groups prior to cross-linking, and wherein the cross-linkable groups are substantially cross-linked by a dendrimer bridging reaction using a linker molecule.

36. (Original) The method of Claim 31, wherein the nanoparticle core comprises a metal, an elemental non-metal, an organic compound, a metal oxide, a metal chalcogenide, a metal pnictogen, a metal halide, an alloy, a mixed metal oxide, or a combination thereof.

37. (Original) The method of Claim 31, wherein the nanoparticle core comprises a boride, a carbide, a silicide, a nitride, a phosphide, an arsenide, an oxide, a sulfide, a selenide, a telluride, a fluoride, a chloride, a bromide, an iodide, or a combination thereof.

38. (Original) The method of Claim 31, wherein the nanoparticle core comprises an oxide of silicon, aluminum, titanium, zirconium, iron, nickel, cobalt, manganese, ruthenium, antimony, tin, cerium, barium, vanadium, chromium, lead, copper, indium, yttrium, zinc, mixed oxides thereof, or combinations thereof.

39. (Original) The method of Claim 31, wherein the nanoparticle core comprises a CdSe nanocrystal, a CdS nanocrystal, or a CdSe/CdS core/shell nanocrystal.

40. (Original) The method of Claim 31, wherein the nanoparticle core is removed from the solid nanoparticle core is removed from the box-nanoparticle by chemical etching, photochemical etching, thermolysis, or a combination thereof.

41. (Original) A method of stabilizing a nanoparticle, comprising:

contacting the nanoparticle with a plurality of cross-linkable dendron ligands to form a dendron-nanocrystal; and

cross-linking the dendron ligands to form a box-nanocrystal.

42. (Original) The method of Claim 41, wherein the nanoparticle comprises a nanocrystal.

43. (Original) The method of Claim 41, wherein the nanoparticle comprises a semiconductor nanocrystal.

44. (Original) The method of Claim 43, wherein the semiconductor nanocrystal is selected from CdS, CdSe, or CdSe/CdS core/shell nanocrystals.

45. (Original) The method of Claim 43, wherein the dendron ligands are selected from generation 2 (G2), generation 3 (G3), generation 4 (G4), or generation 5 (G5) dendrons, and

wherein each dendron ligand is functionalized with one, two, three, four, or more binding sites for coordinating to the nanoparticle.

46. (Original) The method of Claim 41, wherein the cross-linkable dendron ligand is functionalized with one binding sites for coordinating to the nanoparticle, and a plurality of cross-linkable alkene groups.

47. (Original) The method of Claim 41, wherein the cross-linkable dendron ligands comprise cross-linkable alkene, amine, hydroxyl, ester, halide, ketone, or aldehyde groups prior to cross-linking.

48. (Original) The method of Claim 41, wherein cross-linkable dendron ligands comprise alkene groups prior to cross-linking, and wherein the alkene groups are substantially cross-linked by a ring-closing metathesis reaction.

49. (Original) The method of Claim 41, wherein the cross-linkable dendron ligands are substantially cross-linked by a dendrimer bridging reaction using a linker molecule.

50. (Original) The method of Claim 49, wherein the linker molecule comprises a G2 dendrimer amine.

51. (Original) The method of Claim 41, wherein substantially all the dendron ligands in the box nanocrystal are cross-linked.

52. (New) A dendron-nanoparticle, comprising:

a nanoparticle core between about 1 nm and about 1000 nm in diameter; and

a plurality of dendron ligands coordinated to the nanoparticle core, wherein the nanoparticle core comprises an elemental non-metal, an organic compound, a metal oxide, a metal chalcogenide, a metal pnictogen, a metal halide, an alloy, a mixed metal oxide, or a combination thereof.